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CHAPTER 2.3.7.

CRAYFISH PLAGUE

Article 2.3.7.1.

For the purposes of the *Aquatic Code*, crayfish plague means *infection* with *Aphanomyces astaci* Schikora. This organism is a member of a group commonly known as the water moulds (the Oomycetida). Common synonyms are listed in Chapter 4.1.7. of the *Aquatic Manual*.

Methods for conducting surveillance and diagnosis of crayfish plague are provided in the *Aquatic Manual*.

Article 2.3.7.2.

Scope

The recommendations in this Chapter apply to all species of crayfish in all three crayfish families (*Cambaridae*, *Astacidae*, and *Parastacidae*). These recommendations also apply to any other *susceptible species* referred to in the *Aquatic Manual* when traded internationally.

Crayfish plague is most severe in European crayfish species including the noble crayfish (*Astacus astacus*), the white claw crayfish (*Austropotamobius pallipes*), stone crayfish (*Austropotamobius torrentium*), and the Turkish crayfish (*Astacus leptodactylus*). In general, the *Parastacidae* and the *Astacidae* (except *N. American genera such as Pacifastacus*) are highly susceptible, while the *Cambaridae* are resistant to *disease*, but are potential carriers.

There is some evidence of transfer by movement of fish (and their transport water) from waters containing infected crayfish.

Article 2.3.7.3.

Commodities

1. When authorising the importation or transit of the following *commodities*, the *Competent Authorities* should not require any crayfish plague related conditions, regardless of the crayfish plague status of the *exporting country, zone or compartment*.

a) For the species referred to in Article 2.3.7.2. being used for any purpose:

i) commodities treated in a manner that inactivates the *disease agent* e.g. cooked (for >2 minutes at 60°), canned or pasteurised products and ready to eat meals; and crustacean oil and crustacean meal intended for use in animal feeds commercially sterile canned products;

ii) boiled products (e.g. cooked whole shrimp or tails, lobsters, crabs);

- iii) chemically extracted chitin;
 - iv) crustacean meals or by products made non-infectious by heating ($>60^{\circ}\text{C}$ for >5 minutes) or drying by product (e.g. flame dried or sun dried);
 - iii) crustacean products made non-infectious during processing as dry feeds (e.g. pelleted or extruded feeds);
 - iv) biological samples preserved for diagnostic applications in such a manner as to inactivate the *disease agent A. astaci* (e.g. formalin or alcohol preserved samples);
 - v) frozen products that have been subjected to -1020°C or lower temperatures for at least 24 72 hours.
- b) The following products destined for human consumption from species referred to in Article 2.3.7.2. which have been prepared and packaged for direct retail trade in such a way as to minimise the likelihood of alternative uses:
- i) chemically preserved products (e.g. salted, pickled, marinated, pastes, etc.);
 - ii) ~~products that have been heat treated or dried (e.g. ready prepared meals) in a manner to ensure the inactivation of the pathogen.~~

For the *commodities* listed in point 1b), Member Countries should consider introducing internal measures to prevent the *commodity* being used for any purpose other than for human consumption.

2. When authorising the importation or transit of the *commodities* of a species referred to in Article 2.3.7.2., other than those listed in point 1 of Article 2.3.7.3., the *Competent Authorities* should require the conditions prescribed in Articles 2.3.7.7. to 2.3.7.11. relevant to the crayfish plague status of the *exporting country, zone or compartment*.
3. When considering the importation/transit from an *exporting country, zone or compartment* not declared free of crayfish plague of any other commodity of a species not covered in Article 2.3.7.2. but which could reasonably be expected to be a potential *A. astaci* carrier vector, the *Competent Authorities* should conduct a risk analysis in accordance with the recommendations in the Aquatic Code ~~of the risk of introduction, establishment and spread of *A. astaci*, and the potential consequences, associated with the importation of the commodity prior to a decision.~~ The *exporting country* should be informed of the outcome of this assessment.

Article 2.3.7.4.

Crayfish plague free country

A country may make a *self-declaration of freedom* from crayfish plague if it meets the conditions in points 1, 2, 3 or 4 below.

If a country shares a *water catchment* or with one or more other countries, it can only make a *self-declaration of freedom* from crayfish plague if all the areas covered by the shared water are declared crayfish plague free countries or *zones* (see Article 2.3.7.5.).

1. A country where ~~none~~ neither of the *susceptible species* or potential carrier species referred to in Article 2.3.7.2. ~~is~~ are present may make a *self-declaration of freedom* from crayfish plague when *basic biosecurity conditions* have been continuously met in the country for at least the past 2 years.

OR

2. A country where the *susceptible species* referred to in Article 4.1.7.2. are present but there has never been any observed occurrence of the *disease* for at least the past 25 years despite conditions that are conducive to its clinical expression, as described in Chapter X.X.X. of the *Aquatic Manual*, may make a *self-declaration of freedom* from crayfish plague when *basic biosecurity conditions* have been met continuously in the country for at least the past 2 years.

OR

3. A country where the last observed occurrence of the *disease* was within the past 25 years or where the *infection* status prior to *targeted surveillance* was unknown, for example because of the absence of conditions conducive to its clinical expression, as described in Chapter X.X.X. of the *Aquatic Manual*, may make a *self-declaration of freedom* from crayfish plague when:
 - a) *basic biosecurity conditions* have been met continuously for at least the past 2 years; and
 - b) *targeted surveillance*, as described in Chapters 1.1.4. and X.X.X. of the *Aquatic Manual*, has been in place for at least the last 5 years without detection of *A. astaci*.

OR

4. A country that has previously made a *self-declaration of freedom* from crayfish plague but in which the *disease* is subsequently detected may not make a *self-declaration of freedom* from crayfish plague again until the following conditions have been met:
 - a) on detection of the *disease*, the affected area was declared an *infected zone* and a *buffer zone* was established; and
 - b) infected populations have been destroyed or removed from the *infected zone* by means that minimise the risk of further spread of the *disease*, and the appropriate *disinfection* procedures (see *Aquatic Manual*) have been completed; and
 - e) *targeted surveillance*, as described in Chapters 1.1.4. and X.X.X. of the *Aquatic Manual*, has been in place for at least the past 5 years without detection of *A. astaci*.

In the meantime, part of the non-affected area may be declared a *free zone* provided that they meet the conditions in point 3 of Article 4.1.7.5.

Crayfish plague free zone or free compartment

A *zone* or *compartment* within the *territory* of one or more countries not declared free from crayfish plague may be declared free by the *Competent Authority(ies)* of the country(ies) concerned if the *zone* or *compartment* meets the conditions referred to in points 1, 2, 3 or 4 below.

If a *zone* or *compartment* extends over more than one country, it can only be declared a crayfish plague free *zone* or *compartment* if all the relevant *Competent Authorities* confirm that the conditions have been met.

1. A *zone* or *compartment* where ~~none~~ neither of the *susceptible species* or potential carrier species referred to in Article 2.3.7.2. ~~is~~ are present may be declared free from crayfish plague when *basic biosecurity conditions* have been continuously met in the *zone* or *compartment* for at least the past 2 years.

OR

2. ~~A *zone* or *compartment* where the *susceptible species* referred to in Article 4.1.7.2. are present but in which there has not been any observed occurrence of the *disease* for at least the past 10 years despite conditions that are conducive to its clinical expression, as described in Chapter X.X.X. of the *Aquatic Manual*, may be declared free from crayfish plague when *basic biosecurity conditions* have been met continuously in the *zone* or *compartment* for at least the past 2 years.~~

OR

3. ~~A *zone* or *compartment* where the last observed occurrence of the *disease* was within the past 10 years or where the *infection* status prior to *targeted surveillance* was unknown, for example because of the absence of conditions conducive to its clinical expression, as described in Chapter X.X.X. of the *Aquatic Manual*, may be declared free from crayfish plague when:~~
 - a) ~~*basic biosecurity conditions* have been met continuously for at least the past 2 years;~~
~~and~~
 - b) ~~*targeted surveillance*, as described in Chapters 1.1.4. and X.X.X. of the *Aquatic Manual*, has been in place, through the *zone* or *compartment*, for at least the past 2 years without detection of *A. astaci*.~~

OR

4. ~~A *zone* previously declared free from crayfish plague but in which the *disease* is detected may not be declared free from crayfish plague again until the following conditions have~~

been met:

- a) on detection of the *disease*, the affected area was declared an *infected zone* and a *buffer zone* was established; and
- b) infected populations have been destroyed or removed from the *infected zone* by means that minimise the risk of further spread of the *disease*, and the appropriate *disinfection* procedures (see *Aquatic Manual*) have been completed; and
- e) *targeted surveillance*, as described in Chapters 1.1.4. and X.X.X. of the *Aquatic Manual*, has been in place for at least the past 2 years without detection of *A. astaci*.

Article 2.3.7.6.

Maintenance of free status

A country, *zone* or *compartment* that is declared free from crayfish plague following the provisions of points 1 or 2 of Articles 2.3.7.4. or 2.3.7.5. (as relevant) may maintain its status as crayfish plague free provided that *basic biosecurity conditions* are continuously maintained.

A country, *zone* or *compartment* that is declared free from crayfish plague following the provisions of point 3 of Articles 2.3.7.4. or 2.3.7.5. (as relevant) may discontinue *targeted surveillance* and maintain its status as crayfish plague free provided that conditions that are conducive to clinical expression of crayfish plague, as described in Chapter X.X.X. of the *Aquatic Manual*, exist, and *basic biosecurity conditions* are continuously maintained.

However, for declared free *zones* or *compartments* in infected countries and in all cases where conditions are not conducive to clinical expression of crayfish plague, *targeted surveillance* needs to be continued at a level determined by the *Competent Authority* on the basis of the likelihood of *infection*.

Article 2.3.7.7.

Importation of live aquatic animals from a country, zone or compartment declared free from crayfish plague

When importing live *aquatic animals* of species referred to in Article 2.3.7.2. from a country, *zone* or *compartment* declared free from crayfish plague, the *Competent Authority* of the *importing country* should require an *international aquatic animal health certificate* issued by the *Competent Authority* of the *exporting country* or a *certifying official* approved by the *importing country* attesting that, on the basis of the procedures described in Articles 2.3.7.4. or 2.3.7.5. (as applicable), the place of production of the commodity ~~consignment~~ is a country, *zone* or *compartment* declared free from crayfish plague.

The *certificate* should be in accordance with the Model Certificate in Appendix 4.1.3.

This Article does not apply to *commodities* listed in point 1 of Article 2.3.7.3.

Article 2.3.7.8.

Importation of live aquatic animals for aquaculture from a country, zone or compartment not declared free from crayfish plague

1. When importing, for *aquaculture*, live *aquatic animals* of species referred to in Article 2.3.7.2. from a country, zone or compartment not declared free from crayfish plague, the *Competent Authority* of the *importing country* should assess the *risk* and, if justified, apply the following risk mitigation measures such as:
 - a) the direct delivery into and lifelong holding of the consignment in biosecure quarantine facilities for;
 - ~~b) the continuous isolation of the imported live *aquatic animals* and their first generation progeny from the local environment; and~~
 - e)b) the treatment of all effluent and waste materials from the processing in a manner that ensures inactivation of *A. astaci*.
2. If the intention of the introduction is the establishment of a new stock genetic lines, international standards, such as the Guidelines Code of Practice on the Introductions and Transfers of Marine Organisms of the International Council for the Exploration of the Seas (ICES), should be followed.
3. For the purposes of the *Aquatic Code*, the ICES Guidelines Code may be summarised to the following main points:
 - a) identify stock of interest (cultured or wild) in its current location;
 - b) evaluate stock health/*disease* history;
 - c) take and test samples for *A. astaci*, pests and general health/*disease* status;
 - d) import and quarantine in a secure facility a founder (F-0) population;
 - e) produce F-1 generation from the F-0 stock in *quarantine*;
 - f) culture F-1 stock and at critical times in its development (life cycle) sample and test for *A. astaci* and perform general examinations for pests and general health/*disease* status;
 - g) if *A. astaci* is not detected, pests are not present, and the general health/*disease* status of the stock is considered to meet the *basic biosecurity conditions* of the *importing country, zone or compartment*, the F-1 stock may be defined as crayfish plague free or specific pathogen free (SPF) for *A. astaci*;
 - h) release SPF F-1 stock from *quarantine* for *aquaculture* or stocking purposes in the country, zone or compartment.

This Article does not apply to *commodities* listed in point 1 of Article 2.3.7.3.

Importation of live aquatic animals for human consumption from a country, zone or compartment not declared free from crayfish plague

When importing, for human consumption, live *aquatic animals* of species referred to in Article 2.3.7.2. from a country, zone or compartment not declared free from crayfish plague, the *Competent Authority* of the *importing country* should **assess the risk and, if justified,** require that:

1. the consignment be delivered directly to and held in isolation until consumption; and
2. all effluent, dead *aquatic animals* and waste materials from the processing be treated in a manner that ensures inactivation of *A. astaci*.

Member Countries should consider introducing internal measures to prevent such *commodities* being used for any purpose other than for human consumption.

This Article does not apply to *commodities* listed in point 1 of Article 2.3.7.3.

Article 2.3.7.9. bis.

Importation of live fish from a country, zone or compartment not declared free from crayfish plague

Because live fish and their transport water are potential vectors of crayfish plague, the *Competent Authority* of the *importing country* should require appropriate treatment of transport water as indicated in Chapter 1.5.1., when importing live fish from a country, zone or compartment not declared free from crayfish plague.

Article 2.3.7.10.

Importation of aquatic animal products from a country, zone or compartment declared free from crayfish plague

When importing *aquatic animal products* of species referred to in Article 2.3.7.2. from a country, zone or compartment declared free from crayfish plague, the *Competent Authority* of the *importing country* should require an *international aquatic animal health certificate* issued by the *Competent Authority* of the *exporting country* or a *certifying official* approved by the *importing country* attesting that, on the basis of the procedures described in Articles 2.3.7.4. or 2.3.7.5. (as applicable), the place of production of the consignment is a country, zone or compartment declared free from crayfish plague.

The *certificate* should be in accordance with the Model Certificate in Appendix 4.2.2.

This Article does not apply to *commodities* listed in point 1 of Article 2.3.7.3.

Article 2.3.7.11.

Importation of aquatic animal products from a country, zone or compartment not declared free from crayfish plague

When importing *aquatic animal products* of species referred to in Article 2.3.7.2. from a country, *zone* or *compartment* not declared free from crayfish plague, the *Competent Authority* of the *importing country* should assess the risk and apply appropriate risk mitigation measures.

This Article does not apply to *commodities* listed in point 1 of Article 2.3.7.3.

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